

## REMARKS

Some of the rejected claims have been amended to remove the rejections. No new matter has been added.

Applicant submits this Amendment "C" and Response for the Examiner's consideration. Reexamination and reconsideration of the application, as amended, in view of the following remarks are respectfully requested.

### 1. STATUS OF THE CLAIMS

Claims 1-28 and 36-63 were presented for examination; claims 1-28 and 36-63 stand rejected and pending in the application. Claim 54 stands rejected under 35 U.S.C. § 102(e). Claims 1-28 and 36-63 stand rejected under 35 U.S.C. § 103(a). The rejected independent claims and some of the dependent claims have been amended.

### 2. RESPONSE TO REJECTIONS

#### 2.1 Claim Rejections Under 35 U.S.C. § 102(e)

Independent claim 54 stands rejected under 35 U.S.C. § 102(e) as being anticipated by Lee *et al.*, U.S. Patent No. 5,702,982 (hereinafter "Lee").

According to the method recited in claim 54, the contact hole and the trench are filled by "causing the electrically conductive layer to flow into the contact hole and the trench by applying omnidirectional heating." The method for manufacturing an interconnect structure disclosed by Lee and set forth in the Office Action does not include this operation recited in claim 54. *See*, Office Action, pp. 2-3.

Because of the foregoing recited features in claim 54, Lee does not teach or disclose each and every step of the invention recited in this claim. As stated by the Federal Circuit,

Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim.

*Lindermann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1458, 221 U.S.P.Q. 481, 485 (Fed. Cir. 1984). Consequently, Lee does not anticipate the invention recited in this claim. Applicant respectfully submits that claim 54 patentably distinguishes over Lee, and reconsideration and withdrawal of this rejection is respectfully requested.

**2.2 First Set of Claim Rejections Under 35 U.S.C. § 103(a)**

The following claims:

Independent claim 1, and dependent claims 2-11;  
stand rejected under 35 U.S.C. § 103(a) as obvious over Madokoro, U.S. Patent No. 4,997,518 (hereinafter "Madokoro"), in view of Fiordalice *et al.*, U.S. Patent No. 5,420,072 (hereinafter "Fiordalice") as applied in the Office Action mailed May 26, 1999.

Madokoro is cited in the Office Action for its disclosure of a laser flow technique as illustrated in Figs. 1(a) -1(b) therein, and reference is made to the Office Action mailed May 26, 1999. Furthermore, the Office Action asserts that it "would have been inherent to one of ordinary skill in the art at the time the invention was made that since the energy absorbing layer of Madokoro had a higher light absorption capacity than the electrically conductive layer, the energy absorbing layer would thus also have a higher heat absorption capacity than the electrically conductive layer". Office Action, May 26, 1999, pp. 3-4. This assertion was also made in the Office Action mailed November 26, 1999, which further refers to Wada as providing "evidence of state of the art in which

an anti-reflective layer is known to be an energy absorbing layer”, citing col. 19, ll.25-40; col. 26, ll. 9-12, and Fig. 23 therein. Office Action, November 26, 1999, p. 5.

Fiordalice is cited in the Office Action for its disclosure of a metallic diffusion barrier and a metallic seed layer on the diffusion barrier, and reference is made to the Office Action mailed May 26, 1999.

As reasoned hereinbelow, the cited references cannot render the rejected claims obvious for at least the following reasons (a)-(f).

(a) Claim 1 recites “applying, omnidirectionally, energy to said energy absorbing layer to cause said electrically conductive layer to flow within said recess.” In contrast, none of the cited references discloses or suggests the application of energy as recited in claim 1. This recitation is incorporated into claims 2-11 because they depend from claim 1. Furthermore, dependent claim 11 recites that the applying of energy is performed by utilizing a furnace. It is not disclosed or suggested in the cited references how a person of ordinary skill in the art could use the teachings provided in Madokoro regarding a laser flow technique to use the omnidirectional application of energy to the electrically conductive layer to cause this layer to flow within the recess.

Omnidirectional application of energy includes at least the advantage of providing a more uniform temperature distribution inside the recess, thus improving the flowing material’s capability of filling voids and cracks. In contrast, the laser flow technique relies on the unidirectional application of radiation from the top of the device and on the subsequent conversion of some of this laser energy into heat in the top layer of the material that is exposed to the laser.

Support for the claim amendments that recite features such as omnidirectional heating, omnidirectional application of energy, and the use of a furnace is found in the application as filed. *See, e.g.*, Application, p. 12, ll. 7-14. In addition, tube furnace is defined in terms of furnace, and

furnace is defined as a piece of equipment that "is used to maintain a region at constant temperature with a controlled atmosphere for the processing of semiconductor devices." PETER VAN ZANT, MICROCHIP FABRICATION, MCGRAW-HILL (1997), p. 594. *See also id.*, at 604. (Copies attached hereto).

(b) The purported relationship stated in the Office Action between light absorption capacity and heat absorption capacity is not supported in the Office Action. Furthermore, the relevant physical quantities regarding light absorption and heat capacity show that these characteristics of matter are unrelated. The light absorption capacity is related to the reflection coefficient or reflectivity, which is defined as "the ratio of the light reflected from a surface to the total incident light. ... In general it varies with the angle of incidence and with the wavelength of the light." HANDBOOK OF CHEMISTRY AND PHYSICS, at F-100, 68<sup>th</sup> ed. In contrast, the heat capacity "is the quantity of heat required to increase the temperature of a system or substance one degree of temperature." HANDBOOK OF CHEMISTRY AND PHYSICS, at F-86, 68<sup>th</sup> ed. *absorption capacity*

(c) Furthermore, tables of thermodynamic properties of materials including heat capacity, and tables of reflection coefficients for a variety of materials fail to display any known relationship between heat capacities and reflection coefficients. *See, e.g.*, HANDBOOK OF CHEMISTRY AND PHYSICS, tables of reflection coefficients, at E-393 and tables of thermodynamic properties, including heat capacities, at D-51 *et seq.*, 68<sup>th</sup> ed. In addition, Applicant incorporates herein the reasoning provided in Amendment A, pp. 17-20, concerning heat absorption and light absorption. Wada does not establish any relationship between heat capacity and reflectivity. Instead, Wada refers to heat generated upon absorption of light. *See, e.g.*, Wada, col. 19, ll. 37-41. Furthermore, Applicant incorporates herein the reasoning and discussion of the disclosure provided in Wada that are set forth in the following subsection 2.6. *irrelevant*

(d) Madokoro discloses a method for causing a metal to flow into a contact hole, thus establishing electric communication with a source drain diffusion layer. Metal flow is achieved in Madokoro by exposing to a laser source an antireflective W film on the metal layer that is caused to flow into the contact hole. The metal layer in Madokoro is deposited so that it is initially in contact with the source drain diffusion layer in the contact hole. In contrast, independent claim 1 recites the formation of an energy absorbing layer with certain heat capacity, and the use of such layer to absorb energy and deliver the energy to a conductor to make such conductor flow into a recess that is structurally layered in a manner that is different from that disclosed in the cited references. None of the references cited in the Office Action teaches or suggest how to implement the steps recited in claim 1 in light of the laser flow techniques disclosed in Madokoro. Because of this lack of disclosure and suggestions in the references of record, the Office Action may not read into light absorption related phenomena the teachings that are necessary to achieve the flowing of a conductor by applying energy as recited in claim 1.

(e) Furthermore, Madokoro discloses W, TiW, TiN, Ti, Cu and Mo as materials to form the light absorbing film. In contrast, the energy absorbing barrier recited in claim 1, can be made of any material such as titanium nitride, tungsten, a dielectric substance, tantalum, and carbon, further distinguishing the light absorbing film disclosed in Madokoro. See, Application, p. 12, ll. 3-6. Madokoro fails to teach the range of materials with which the method recited in claim 1 can be implemented in light of the metals and metal combinations disclosed in such reference.

(f) Fiordalice does not actually teach or suggest the layering in the recess as recited in claim 1. The TiN layer 24 in Fiordalice is formed on the lower seed layer 22. See, Fiordalice, col. 3, ll. 60-62. In contrast, the method recited in claim 1 refers to a seed layer on a diffusion barrier layer.

When the teachings of the cited references are compared with the method recited in independent claim 1, which is incorporated into its dependent claims 2-11, it follows that the cited references disclose a flow technique that relies on an entirely different physical principle, which is implemented with different materials on the basis of different physical parameters, and which is used on structurally different articles of manufacture.

Because of the limitations in its teachings, Madokoro does not teach or suggest the claimed method. The claimed method as recited in claims 1-11 is not restricted to its implementation with a laser flow technique as disclosed in Madokoro.

Because of differences and limitations such as those described hereinabove, Madokoro has not suggested the claimed subject matter, and it may not be asserted that the teachings provided by Madokoro are sufficient for one of ordinary skill in the art to make the substitutions, combinations or other modifications that are necessary to arrive to the claimed invention as recited in claims 1-11.

In addition, Madokoro does not provide any suggestion or teaching that the claimed invention should have been carried out and would have had a reasonable likelihood of success. To this respect, the Federal Circuit has explained that “[t]he consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this process should be carried out and would have a reasonable likelihood of success.” (Citations omitted). *Rockwell Int’l Corp. v. United States*, 147 F.3d 1358, 47 U.S.P.Q.2d 1027, 1033 (Fed. Cir. 1998). In addition, “[b]oth the suggestion and the expectation of success must be founded in the prior art, not in Applicant’s disclosure.” *In re Dow Chemical Co.*, 837 F.2d 469, 473 (Fed. Cir. 1988).

Furthermore, in light of these differences and limitations in Madokoro, “a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.”

*United States v. Adams*, 383 U.S. 39, 52 (1966). See also *W.L. Gore & Assocs. v. Garlock, Inc.*, 721 F.2d 1540, 1550-51 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).

Consequently, Applicant respectfully submits that Madokoro does not support a *prima facie* case of obviousness regarding claims 1-11. Applicant respectfully requests the reconsideration and withdrawal of this rejection.

It has not been established that Fiordalice provides any basis that would overcome the limitations and differences established with respect to the disclosure in Madokoro. Furthermore, even if Fiordalice were combined with Madokoro, the combination would not teach, disclose or suggest the method recited in any of the claims 1-11; therefore, neither Madokoro nor Fiordalice combined with Madokoro may render the subject matter recited in such claims obvious.

Consequently, Applicant respectfully submits that neither Madokoro nor Fiordalice supports a *prima facie* case of obviousness regarding claims 1-11. Applicant respectfully requests the reconsideration and withdrawal of this rejection.

### **2.3 Second Set of Claim Rejections Under 35 U.S.C. § 103(a)**

The following claims:

Dependent claims 12-13 and 15;

Independent claim 16, and dependent claims 17-20 and 22; and

Independent claim 23;

stand rejected under 35 U.S.C. § 103(a). The Office Action alleges that the rejected claims are "unpatentable over Madokoro in view of Fiordalice" as applied to claim 1, and further in view of Fiordalice *et al.*, U.S. Patent No. 5,578,523 (hereinafter "Fiordalice '523") as applied in the Office Action mailed May 26, 1999, and Huang *et al.*, U.S. Patent No. 5,635,423 (hereinafter "Huang").

The limitations and features regarding claim 1 referred to in foregoing subsection 2.2 are incorporated into dependent claims 12-13 and 15. Furthermore, independent claim 16 recites "heating, omnidirectionally" and independent claim 23 recites "heating with a furnace". The recitation in claim 16 is incorporated into its dependent claims 17-20 and 22.

Applicant incorporates herein the reasoning, quotes and distinguishing features provided in foregoing subsection 2.2 regarding Madokoro and Fiordalice. The disclosure provided in Fiordalice '523 regarding Figs. 5-7 therein as set forth in the Office Action mailed May 26, 1999, does not teach or suggest any of the differences and limitations set forth in foregoing subsection 2.2 with respect to the disclosure given in Madokoro and Fiordalice. The same lack of teachings and suggestions regarding the differences and limitations set forth in foregoing subsection 2.2 with respect to Madokoro and Fiordalice apply to the disclosure in Huang. Therefore, it has not been established that Huang or Fiordalice '523 provides any basis that would overcome the limitations and differences established hereinabove with respect to the disclosure in Madokoro and Fiordalice. Furthermore, even in Huang and/or Fiordalice '523 were combined with Madokoro and/or Fiordalice, the combination would not teach, disclose or suggest the method recited in claims 12-13, 15-20, 22 and 23; therefore, neither one of these references nor any combination thereof may render the subject matter recited in such claims obvious. Applicant incorporates herein the quotes to Federal Circuit opinions given in foregoing subsection 2.2.

Consequently Applicant respectfully submits that Madokoro, Fiordalice, Huang and Fiordalice '523 do not support a *prima facie* case of obviousness regarding claims 12-13, 15-20, 22 and 23. Applicant respectfully requests the reconsideration and withdrawal of this rejection.

#### **2.4 Third Set of Claim Rejections Under 35 U.S.C. § 103(a)**

The following claims:

Independent claim 24, and dependent claims 25-27; and

Independent claim 28;

stand rejected under 35 U.S.C. § 103(a) "as being unpatentable" over Madokoro, in view of Fiordalice, Fiordalice '523, and Huang "as applied to claim 16 above", and further in view of Sirkin, U.S. Patent No. 4,700,465 (hereinafter "Sirkin") "as previously applied in the Office Action mailed 05/26/99".

Independent claims 24 and 28 recite "heating omnidirectionally with a furnace" and this recitation is incorporated into claims 25-27 because they depend from claim 24.

Applicant incorporates herein the reasoning, quotes and distinguishing features provided in foregoing subsection 2.3 regarding Madokoro, Fiordalice, Fiordalice '523, and Huang. Sirkin is cited in the Office Action mailed May 26, 1999, as a reference that provides disclosure related to the location where dielectric material is formed on a semiconductor substrate assembly. Accordingly, the disclosure in Sirkin as set forth in the Office Action mailed May 26, 1999, does not teach or suggest any of the differences and limitations set forth in foregoing subsection 2.2 with respect to the disclosure given in Madokoro and Fiordalice. The same lack of teachings and suggestions regarding the differences and limitations set forth in foregoing subsection 2.3 with respect to Madokoro, Fiordalice, Fiordalice '523, and Huang apply to the disclosure in Sirkin. Therefore, it has not been established that Sirkin provides any basis that would overcome the limitations and differences established hereinabove with respect to the disclosure in the other cited references. Furthermore, even if Sirkin were combined with Madokoro, Fiordalice, Fiordalice '523 and/or Huang, the combination would not teach, disclose or suggest the method recited in claims 24-28; therefore, neither one of these references nor any combination thereof may render the subject matter

recited in such claims obvious. Applicant incorporates herein the quotes to Federal Circuit opinions given in foregoing subsection 2.2.

Consequently, Applicant submits that Madokoro, Fiordalice, Fiordalice '523, Huang and Sirkin do not support a *prima facie* case of obviousness regarding claims 24-28. Applicant respectfully requests the reconsideration and withdrawal of this rejection.

**2.5 Fourth Set of Claim Rejections Under 35 U.S.C. § 103(a)**

The following claims:

Independent claim 36, and dependent claims 37-41 and 43-44; and

Independent claim 45;

stand rejected under 35 U.S.C. § 103(a) "as being patentable over Madokoro in view of Fiordalice ... as previously applied in the Office Action mailed 11/26/99".

Independent claims 36 and 45 recite omnidirectional heating, which is incorporated into dependent claims 37-41 and 43-44 because they depend from claim 36. Furthermore, claim 43 recites the use of a furnace to apply the heating.

Applicant incorporates herein the reasoning, quotes and distinguishing features provided in foregoing subsection 2.2 regarding Madokoro and Fiordalice. Therefore, the same lack of teachings and suggestions regarding differences and limitations set forth in foregoing subsection 2.2 apply with regard to claims 36-41 and 43-45. Applicant incorporates herein the quotes to Federal Circuit opinions given in foregoing subsection 2.2.

Consequently, Applicant submits that Madokoro and Fiordalice do not support a *prima facie* case of obviousness regarding claims 36-41 and 43-45. Applicant respectfully requests the reconsideration and withdrawal of this rejection.

2.6 *Fifth Set of Claim Rejections Under 35 U.S.C. § 103(a)*

Dependent claim 42 stands rejected under 35 U.S.C. § 103(a) "as being unpatentable over Madokoro in view of Fiordalice ... as applied to claim 36 above, and further in view of Wada." Office Action, p. 4.

Wada discloses phenomena such as heating related to light absorption and reflection-preventing films. *See, e.g.*, Wada, col. 19, ll. 36-41. In contrast, claim 42 incorporates the features and limitations recited in independent claim 36 from which it depends. As such, the claimed method includes "omnidirectionally heating the energy absorbing layer." The Office Action reads into light absorption related phenomena the teachings that are necessary to achieve the flowing of a conductor by applying to an energy absorbing layer omnidirectional heat instead of unidirectional light. This reading, however, is not supported by any of the cited references, as reasoned in foregoing section 2.2.

Furthermore, the sources, application techniques, effects, materials' technology, and precautions to be taken to avoid detrimental effects on the rest of the exposed article of manufacture are different and not obviously interchangeable depending on whether unidirectional light or omnidirectional heat is directly applied to a material. Actually, even if we focus only on irradiation methods, different irradiation methods lead to different problems even though all such methods basically apply light that is absorbed on a sample. This situation is highlighted in the main reference cited in the Office Action. For example, Madokoro describes in col. 1, ll. 1-68, col. 2, ll. 1-2, problems derived from different irradiation techniques, and claims a method that includes a form of irradiation to solve such problems. Accordingly, the art of record cited in the Office Action distinguishes different irradiation methods by highlighting problems that render them non-obvious in light of one-another even though all irradiation methods rely on the same physical principle

regarding the absorption of light. It is therefore untenable to assert that a method that includes the application of heat instead of irradiation is rendered obvious in light of references that disclose irradiation.

The same lack of teachings and suggestions regarding the differences and limitations set forth in foregoing subsection 2.2 with respect to Madokoro and Fiordalice apply to the disclosure in Wada. Therefore, it has not been established that Wada provides any basis that would overcome the limitations and differences established hereinabove with respect to the disclosure in Madokoro and Fiordalice. Furthermore, even if Wada were combined with Madokoro and Fiordalice, the combination would not teach, disclose or suggest the method recited in claim 42; therefore, neither one of these references nor any combination thereof may render the subject matter recited in claim 42 obvious. Applicant incorporates herein the quotes to Federal Circuit opinions given in foregoing subsection 2.2.

Consequently, Applicant submits that Madokoro, Fiordalice and Wada do not support a *prima facie* case of obviousness regarding claim 42. Applicant respectfully requests the reconsideration and withdrawal of this rejection.

#### **2.7 Sixth Set of Claim Rejections Under 35 U.S.C. § 103(a)**

Dependent claims 14 and 21 stand rejected under 35 U.S.C. § 103(a) "as being unpatentable over Madokoro in view of Fiordalice ... as applied to claim 1 above, and over Madokoro in view of Fiordalice ..., Fiordalice '523, and Huang as applied to claim 16 above, respectively, and further in view of Kataoka" *et al.*, U.S. Patent No. 5,653,810 (hereinafter "Kataoka"), as previously applied in the Office Action mailed 5/26/99." Office Action, pp. 4-5.

Claim 14 depends from claim 1, and claim 21 depends from claim 16. Therefore, these dependent claims incorporate, respectively, the recitations in claims 1 and 16 that have been referred to above.

Applicant incorporates herein the reasoning, quotes and distinguishing features provided in foregoing subsections 2.2 and 2.3 regarding Madokoro, Fiordalice, Fiordalice '523 and Huang. Kataoka is cited in the Office Action mailed May 26, 1999, as a reference that provides disclosure related to recess aspect ratios. Accordingly, the disclosure in Kataoka as set forth in the Office Action mailed May 26, 1999, does not teach or suggest any of the differences and limitations set forth in foregoing subsections 2.2 and 2.3 with respect to the disclosure given in the other cited references. The same lack of teachings and suggestions regarding the differences and limitations set forth in foregoing subsections 2.2 and 2.3 with respect to Madokoro, Fiordalice, Fiordalice '523, and Huang apply to the disclosure in Kataoka. Therefore, it has not been established that Kataoka provides any basis that would overcome the limitations and differences established hereinabove with respect to the disclosure in the other cited references. Furthermore, even if Kataoka were combined with Madokoro, Fiordalice, Fiordalice '523 and/or Huang, the combination would not teach, disclose or suggest the method recited in claims 14 and 21; therefore, neither one of these references nor any combination thereof may render the subject matter recited in such claims obvious. Applicant incorporates herein the quotes to the Federal Circuit opinions given in foregoing subsection 2.2.

Consequently, Applicant submits that Madokoro, Fiordalice, Fiordalice '523, Huang and Kataoka do not support a *prima facie* case of obviousness regarding claims 14 and 21. Applicant respectfully requests the reconsideration and withdrawal of this rejection.

Regarding the characterization of the aspect ratio made in item 10 of the Office Action, p. 5, Applicant notes that the written description in the present patent application specifies, for

example, "challenging structures (*e.g.*, recesses in dielectric material 14 having aspect ratios greater than four (4) to one (1)". Application, p. 11, *ll.* 15-16.

## 2.8 Seventh Set of Claim Rejections Under 35 U.S.C. § 103(a)

Independent claim 57, and dependent claims 58 and 60 stand rejected under 35 U.S.C. § 103(a) "as being unpatentable over Schacham-Diamand," *et al.*, U.S. Patent No. 5,824,599 (hereinafter "Schacham") in view of Lee, *et al.*, U.S. Patent No. 5,702,982 (hereinafter "Lee").

Schacham discloses the formation of an adhesion promoter layer 16b on a dielectric material 12a, the formation of a barrier layer 17b on the adhesion promoter layer 16b, and the formation of a seed layer 18b on the barrier layer 17b. *See, e.g.*, Schacham, Fig. 19. In contrast, claim 57 recites "applying, omnidirectionally, energy to the electrically conductive layer to cause the electrically conductive layer to flow within the recess", and also the forming of a diffusion barrier layer on the trench and the contact hole.

Schacham does not teach or suggest the formation of the diffusion barrier layer without such adhesion promoter layer. The lack of this teaching is particularly significant because the diffusion barrier layer, the seed layer, and the electrically conductive layer recited in claim 57 are composed of materials whose melting points satisfy the specific relationships recited therein. This is in contrast also with the materials recited in Schacham, which generally do not satisfy the limitations recited in claim 57 regarding the melting points. For example, Schacham discloses that the barrier layer can be formed from Ti (melting point  $1660^{\circ}\text{C} \pm 10^{\circ}\text{C}$ ) and that the seed layer can be formed from Pt (melting point  $1772^{\circ}\text{C}$ ) or Rh (melting point  $1966^{\circ}\text{C} \pm 3^{\circ}\text{C}$ ). *See*, Schacham, col. 7, *ll.* 22-31. Clearly, these melting points do not satisfy the relationship recited in claim 57, according to which the diffusion barrier layer is composed of a material having a melting point greater than or equal to that of a material from which the seed layer is composed. Furthermore, Schacham discloses that a

seed layer can be formed from Ag (melting point 961.93°C) or Au (melting point 1064.43°C) and that the conductor layer can be Cu (melting point 1083.4°C ± 0.2°C). *See*, Schacham, col. 7, ll. 22-31. Clearly, these melting points do not satisfy the relationship recited in claim 57, according to which the material from which the seed layer is composed has a melting point greater than or equal to that of the material from which the electrically conductive layer is composed. Therefore, Schacham discloses the formation of layered materials of general melting points characteristics with the aid of an adhesion promoter layer. It has not been shown how this disclosure teaches in light of the ordinary skill in the art the formation of the specific layers recited in claim 57 with materials that satisfy the melting point relationships recited therein. This reasoning is applied to claims 58 and 60 because they depend from independent claim 57 and thus incorporate the features and limitations recited in claim 57.

Schacham does not teach applying, omnidirectionally, energy to an electrically conductive layer. Applicant incorporates herein with respect to this lack of teachings or suggestions the reasoning and quotes set forth in the foregoing subsections 2.2 and 2.3.

Because of the limitations in its teachings, Schacham does not teach or suggest the claimed method. The method recited in claims 57-58 and 60 is not restricted to its implementation with the methodology disclosed in Schacham. Because of differences and limitations such as those described hereinabove, Schacham has not taught or suggested the claimed subject matter, and it may not be asserted that the teachings in Schacham are sufficient for one of ordinary skill in the art to make the substitutions, combinations or other modifications that are necessary to arrive to the invention recited in claims 57-58 and 60.

In addition, Schacham does not provide any suggestion or teaching that the claimed invention should have been carried out and would have had a reasonable likelihood of success. Applicant incorporates therein the quotes to Federal Circuit opinions given in foregoing subsection 2.2.

Consequently, Applicant respectfully submits that Schacham does not support a *prima facie* case of obviousness regarding claims 57-58 and 60.

It has not been established that Lee provides any basis that would overcome the limitations and differences established with respect to the disclosure in Schacham. Furthermore, even if Lee were combined with Schacham, the combination would not teach, disclose or suggest the method recited in claims 57-58 and 60; therefore, neither Schacham, nor Lee combined with Schacham may render the subject matter recited in these claims obvious.

Consequently, Applicant respectfully submits that neither Schacham nor Lee supports a *prima facie* case of obviousness regarding claims 57-58 and 60. Applicant respectfully requests the reconsideration and withdrawal of this rejection.

**2.9 Eighth, Ninth, Tenth and Eleventh Sets of Claim Rejections Under 35 U.S.C. § 103(a)**

Independent claim 46, and dependent claim 47;

Independent claim 48, and dependent claims 49-53;

Independent claim 54, and dependent claims 55-56;

Dependent claims 59 and 61; and

Independent claim 62, and dependent claim 63,

stand rejected under 37 C.F.R. § 103(a), and Schacham is being asserted as the main reference on the basis of which the rejections are asserted. Applicant incorporates herein the reasoning and the grounds for traversal set forth in foregoing subsection 2.8 regarding Schacham. None of the

additional references cited teaches or suggests any of the differences and limitations set forth in foregoing subsection 2.8 with respect to the disclosure in Schacham.

Consequently, Applicant respectfully submits that Schacham and the additional references cited in the Office Action do not support a *prima facie* case of obviousness regarding claims 46-56, 59 and 61-63. Applicant respectfully requests the reconsideration and withdrawal of this rejection.

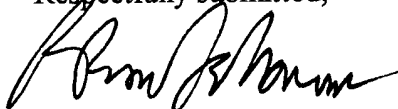
### 3. CONCLUSIONS

In view of the above, Applicant respectfully maintains that the present application is in condition for allowance. Reconsideration of the rejections is requested. Allowance of claims \*\*\* at an early date is solicited.

In the event that the Examiner finds any remaining impediment to a prompt allowance of this application which could be clarified by a telephonic interview, or which is susceptible to being overcome by means of an Examiner's Amendment, the Examiner is respectfully requested to initiate the same with the undersigned attorney.

Dated this 5<sup>th</sup> day of December 2000.

Respectfully submitted,



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